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ABSTRACT

Included in this document are texts of speeches given at the conference. The speakers whose remarks appear are: (1) John F. O'Leary, Deputy Secretary of the Department of Energy; (2) Cecil D. Andrus, Secretary of Interior; (3) Julian M. Carroll, Governor of Kentucky; (4) Arnold Packer, Assistant Secretary, Department of Labor; and (5) James Schlesinger, Secretary of Energy. Topics include economic considerations, government plans and activities concerning energy, the interaction of energy production and environmental protection, environmental and energy awareness, energy policy interaction with labor policy, and the challenge of meeting the energy crisis successfully. (RE)

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Conference Highlights

January 15-17, 1979
Washington Hilton Hotel
Washington, D.C.

National Energy Education, Business and Labor Conference

Skill and Technical Training
Employment
Public Energy Awareness

Sponsored by
The United States Department of Energy
Office of Education, Business and
Labor Affairs in cooperation with
The American Association of
Community and Junior Colleges
The American Vocational Association

SE 027 860

There have been many requests for the proceedings of the National Energy Education, Business and Labor Conference which took place in January, 1979. Because the complete proceedings total 1700 pages, highlights have been assembled for distribution. Should further information be required, please write to:

Dr. Lawrence G. Stewart, Director
Office of Education, Business and Labor Affairs
Department of Energy
Forrestal Building
Washington, D.C. 20585

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CONFERENCE AGENDA OUTLINE

Monday, January 15

1:30 p.m. to 5:00 p.m.	Special Workshop 'Energy Management'
7:00 p.m. to 8:45 p.m.	Opening Session
9:00 p.m. to 10:00 p.m.	Cash Bar

Tuesday, January 16

8:30 a.m. to 10:00 a.m.	General Session
10:20 a.m. to 11:20 a.m.	Specialty Sessions (Solar, Coal, Oil & Gas, Nuclear, Conservation, & Public Awareness)
11:30 a.m. to 1:00 p.m.	Luncheon
1:30 p.m. to 5:00 p.m.	Specialty Sessions

Wednesday, January 17

8:30 a.m. to 11:15 a.m.	Specialty Sessions
11:30 a.m. to 1:00 p.m.	Luncheon
1:15 p.m. to 4:45 p.m.	General Session

TASK FORCE REPORTS

In preparation for the National Energy Education, Business and Labor Conference, task forces were formed representing the major areas with which the Conference would be concerned. These Task Forces comprised of education, business and labor leaders met at various times in Washington, D.C., during the months of October and November, 1978. Task Force reports on education and training were prepared and distributed at the National Conference. The six Task Force reports are on Coal, Conservation, Nuclear, Oil and Gas, Public Energy Education, and Solar.

A limited number of task force reports were printed and are available upon request by writing to the following office:

Education Programs Division
U.S. Department of Energy
Forrestal Building, 8G-031
Washington, D.C. 20858

SUMMARY INFORMATION

SUBJECT: National Energy Education, Business and Labor Conference
January 15-17, 1979
Washington Hilton Hotel
Washington, D.C.

SPONSORS: United States Department of Energy, Office of Education, Business and Labor Affairs, in conjunction with
The American Association of Community and Junior Colleges
The American Vocational Association

PROGRAM RESUME:

Opening Special Session

General Sessions (5)

Speakers:

The Honorable James R. Schlesinger, Secretary of Energy
The Honorable Cecil Andrus, Secretary of the Interior
The Honorable John F. O'Leary, Deputy Secretary, Department of Energy
The Honorable Julian M. Carroll, The Governor of Kentucky
The Honorable Arnold Packer, Assistant Secretary, Department of Labor

Specialty Sessions:

Solar - 18 speakers
Public Energy Education - 26 speakers
Conservation - 19 speakers
Coal - 14 speakers
Oil and Gas - 16 speakers
Nuclear - 20 speakers

Total: 103 speakers. Of these, 34 were from industry, 11 represented labor unions, 36 were educators, 19 came from government, and 3 speakers represented other interests.

American Vocational Association Sessions: 4 speakers

EXHIBIT PROGRAM: 39 exhibitors presented displays featuring educational and training materials as well as energy-related products and services.

ATTENDANCE:

Total: 1312
Registered: 1034
Non-registered: 278

Geographical Representation:

New England - 62
Middle Atlantic - 165
East North Central - 122
West North Central - 38
South Atlantic - 444
East South Central - 53
West South Central - 44
Mountain - 50
Pacific - 56
Unknown - 278

Affiliation of attendees:

Educators - 44%
Industry - 17%
Government - 11%
Public Interest - 5%
Labor - 2%
Unidentified - 21%

Welcoming Remarks by Dr. Lawrence G. Stewart
Director
Office of Education, Business and
Labor Affairs
Department of Energy

ASSISTANT SECRETARY HUGHES (RIGHT)
AND DIRECTOR L. G. STEWART.

DR. STEWART: It is rather cold outside tonight and a good evening to start off our conference on energy. My name is Larry Stewart, and I am in the Office of Education, Business and Labor Affairs of the newly formed, about a year and a quarter old, Department of Energy. This is our first opportunity and privilege to bring together such a distinguished and diverse group of constituencies to address one central theme -- manpower needs, assessment, and training. We believe that a shortage of trained manpower is one of the major impediments that will restrict the early implementation of the National Energy Act.

We hope that this conference will be beneficial to you, and I know that you have come prepared to give us your very best thinking in aiding us in the resolution of this impediment, thus helping to insure early implementation of the National Energy Act.

I welcome you to the City of Washington. I welcome you to share with us in the Department of Energy your ideas, solutions, and recommendations in attacking this problem, the problem of human resources development. This conference has a very specific aim and objective, and I feel confident that the knowledge that we gain through this first national forum of information interchange will be of benefit to the country now and in the future.

Text of the Address by The Honorable John F. O'Leary
Deputy Secretary
The Department of Energy

With introductory remarks by The Honorable Philip S. Hughes
Assistant Secretary
Intergovernmental and
Institutional Relations
The Department of Energy

ASSISTANT SECRETARY HUGHES: Welcome again to all of you. I am not ever really sure what the connotation of that term "honorable" is when applied to a senior, at least in one way or another, bureaucrat. I think I am going to move to have it stricken from future introductions on the general theory that if we are, that is okay, and if you are not, calling you one will not help.

It is my real pleasure to introduce to you the Deputy Secretary of the Department of Energy, John F. -- most usually known as Jack -- O'Leary. He has been in that position since the creation of the Department as have the rest of us within the Department of Energy. Obviously it is not all that long.

He has the distinction of having survived prior service in the Federal Energy Administration and became a part of the new Department when it came into being. Jack has served as Administrator of the New Mexico Energy Resources Board from November 1975 until his appointment at the FEA.

He was Technical Director of Energy Resources in the Environment Division of Mitre. From '72 to '74, he was Director of Licensing for the Atomic Energy Commission and has been a consultant to a variety of firms in one form or another of the energy business.

Prior to that, he served as the Director of the Bureau of Mines from '68 to '70 and in '67 and '68, a Chief of the Bureau of Natural Gas in the Federal Power Commission. He served as Deputy Assistant Secretary for Mineral Resources in the Department of Interior from '62 to '67.

Previously, he was an economist in the Department of Interior. I am moved to make somewhat the same comment that one of my son-in-laws made about me or my daughter; he said, "Jean, your dad really can't keep a steady job; can he?" He was born a few years ago but substantially later than I was. He has, as you have seen, a rather distinguished, as well as a varied career in energy and energy-related matters, and I think is one of the few in these days who, in a broad sense, can really qualify as an expert in the field of energy.

I think we are extremely fortunate to have him as the Deputy Secretary of the Department of Energy. I think you will agree with me that we are fortunate to have him with us tonight as our leadoff speaker. May I introduce Jack O'Leary.

(Applause.)

MR. O'LEARY: Sam is wrong with regard to the age matter. I am older than he is; he has just had a harder life. His remarks with regard to Honorable, I was the Presidential appointee, i.e. Honorable, under Mr. Johnson; Mr. Nixon came into office and a year later fired me and I became presumably dishonorable or at least unhonorable. I am delighted that under this Administration, I am once again honorable. I think that supports his point that it is really a paper title.

Let me spend my time with you this evening discussing what I believe is the central problem before this country in coming to grips with the energy problem. I can take as a point of departure a discussion I had in a hotel lobby the other day while trying to arrange some changes in reservations in Yucatan, Mexico, so I could get back for this conference.

I was talking to a fellow from Texas who had a long, long experience in the oil industry as a rig superintendent. Earlier, he worked as a laborer in the oil business and he had now gotten to the point where he was a fairly senior man with one of the larger service companies.

He said, "I am down here on oil business, taking a look at what Mexico can do."

I said, "Yes, I am as interested in that as you are."

He said, "You know, we shouldn't be down here, there is plenty of oil in the United States, it is just that those large oil companies have got it shut in. It is there; there is no oil problem, other than that which is created by the oil companies in sort of a conspiracy against the people."

That is not the first time I have heard that; I keep hearing and hearing it. I hear it in Congressional committees.

I was, for example, before Congressman Dingell about a month and a half ago when the Iranian business was just starting up. He said, "Mr. O'Leary, don't you think troubles in Iran now are aimed at driving the oil price up in the coming negotiations for OPEC?"

I said I really didn't think so; I didn't think that the Shah would put himself in peril in that way.

He said, "Well, I think you don't understand really the way the world is. My own view is that this is really a part of a conspiracy to overcharge the American people, the people of Europe and Japan. It is just another manifestation of the oil monopoly."

You reflect on that a little while and you read your Washington Post. About a month and a half or two months ago, just before the Iranian situation let loose, we were treated almost daily to article after article after article with regard to the glut first of all of oil, then of natural gas in the United States.

You recall the oil glut. Their story is we have so much oil coming out of Alaska that we don't know what to do with it. My version of that story is that four years too late we finally have a full flow of oil, 1.2 million barrels a day, out of Alaska. It is four years

too late because this country does not understand the severity of the problem with which it is confronted in petroleum.

Finally, when the oil starts coming down the pipeline, we have to have other permits in hand that will allow that oil to move through pipelines off the West Coast where it can be used. It is not a matter of the Alaskan oil being excess, because we are still importing 500,000 barrels of oil a day on the West Coast, and because of the quality of the Alaskan oil, we can't use it on the West Coast, and we can't get it into the mid-continent of the United States where it can be used. The SOHIO Company has been trying unsuccessfully for almost four years to obtain the necessary permits from the State of California to build a short piece of pipeline and some holding facilities at the Port of Long Beach to connect with an already existing natural gas pipeline that flows from the California border on into the middle of Texas.

So the oil glut, then, if you take a look at it from the standpoint of sheer statistics, really is not a glut at all. It is an embarrassment to everyone that we can't find a way to move that oil inland, but certainly we need that oil because all the time that we have that glut of oil that at the most was about 500,000 barrels a day, we were importing better than 8,000,000 barrels a day in order to maintain the standard of living to which we have become accustomed in this country.

In the summer, we read, again, in the Washington Post about the glut of natural gas. The articles would have you believe that all of a sudden we have found a lot of new natural gas.

The fact is that natural gas production has been falling year by year, year by year. This year we will be producing about 18.5 trillion cubic feet as opposed to the peak production in 1972 of around 23 trillion cubic feet, and next year, a little less and probably the year after a little less.

What happened in the last couple of years is that a lot of consumers, big industrial consumers, not householders, have become frightened of not being able to get natural gas and have dropped off the vine, so demand has gone down more rapidly than supply has gone down.

Of course when we ask ourselves what those industrial users who formerly used natural gas are now using, we find that 85 percent of the energy value of that natural gas has been replaced by imported oil.

Last year, we spent almost $40 billion for oil imports. This year, thanks to the fact that we have no options and that OPEC has chosen to raise the price another 15 percent, we will spend almost $50 billion. If things go on the way they are now it is certain that by the middle of the next decade, or a short six years from now, we will be spending $100 billion and there will be no light at the end of the tunnel.

Why is that? Is it because we do not have the resources here to deal with it? Is it because we don't have, in the communities that you represent, the skills to deal with our energy problem? No. It is because we have no national sense of what that problem really is and what it really takes to solve it. We tend to take the easy view that Secretary Schlesinger has characterized as "sheer wishful thinking", that

the cause is a conspiracy and tomorrow morning the conspiracy will end and gasoline will go back to 30 cents a gallon; or that it is a conspiracy on the part of the natural gas producers and tomorrow morning all those shut-in wells will begin to produce and natural gas will once again flow abundantly to American homes and industry. If the conspiracy theory were true, we wouldn't have to make the hard choices, such as massive investment to bring solar energy beyond the relatively primitive level of use that we have today, which is going to require an enormous amount of money. Next year we will spend a billion dollars and get very little in return for it in the short run on solar energy.

Another hard choice is mining more coal, something this country finds utterly distasteful.

Somehow or another, their ego says there will be a magic wand that will be waved and Mexico will save us; or Alaska will save us; or the potential production offshore New Jersey, in the Baltimore Canyon, which is turning out to be a bitter disappointment to those that are investing in it, will save us; or the Gulf of Alaska, which in my days in the Department of Interior was regarded as the national treasure trove of oil, will save us.

No, I'm afraid that we have a massive job of education before us; otherwise, nothing will save us. You are the people who are going to be in the front line to a very large extent, in that effort.

I will spend this little time that I have with you trying to tell you my best impression of where this country stands and where it is going to go unless we are careful. First of all we run our energy economy essentially on a limoted number of systems. Let me name them for you.

We have an oil system and a natural gas system and we import both, so there are two additional subsystems. We have a big coal system in this country, although nothing approaching the oil and gas system. We have a nuclear system and we have got the beginnings of a solar system, largely today in the form of hydropower. Those five systems really are our mainstays.

Where do we stand? What is the health of those systems? First of all let me give you some numbers. This country, next year in 1980, will use about 80 quadrillion BT's (quads) of energy. If we are reasonably successful in terms of GNP, we can expect gross national product to rise by some 3 to 4 percent annually. If we are very successful in conservation, which we might list as a sixth system for energy, we might be able to break the historical tie that has said one percent increase in GNP is accompanied by one percent increase in energy use. Obtaining over the remainder of the century a three to four percent increase in gross national product with only a two percent annual increase in energy requirements. That will take an extraordinary amount of skill on our part.

In 1977, for each dollar of gross national product that we were producing, in real dollar terms, we required 95 percent of the energy used in 1972, and 1972 was pretty well representative of the previous 25 years.

In short, after the shocks to this economy, we have gotten 5 percent away from dependence upon energy to generated GNP. What that suggests to me is that if we can, for the remaining 20 years of the century, have GNP rising at three to four percent per year and do it on only a two percent increase in energy, roughly 50 percent on growth of the amount we are using now for that level of GNP growth, it will be an extraordinary achievement.

Now let us add that annual growth rate to the 80 quads of energy that we will use in 1980. That takes us up to about 120 quads of energy use by the year 2000. How are we going to get it?

First of all, domestic oil, if we are very lucky and can get continued access to the outer continental shelf and to Alaska, we may be able to stay even at roughly today's level of production, which we will call 20 quads, but we almost certainly will not be able to add to it.

Now, on what do I base that estimate? We have 560,000 producing wells in this country. We recently proposed legislation under the context of the National Energy Act that offered a new price for, in this instance new gas wells, mentioned as being 2 1/2 miles from the existing producing gas wells. The oil industry laughed us out of the room in Congress.

They said, there is no part of this country that is 2 1/2 miles away from existing wells that is going to produce gas. We have really worked this country over thoroughly. We have been at it now for 120 years roughly.

In recent decades, we have added an enormous amount of technology in our research for oil and we have given the old United States a pretty good massaging. The production rate from existing wells is dropping seven to eight percent a year. We are finding new oil at a rate substantially below the level of exhaustion of existing oil.

Another way to look at it is this, 50 percent of the oil and gas we get comes from about 100 oil and gas fields and we have 12,000 fields in total in this country. We get the mass of our oil out of a few fields and with the exception of the Prudhoe Bay field in Alaska we haven't found one of those hundreds of giants in this country in many years.

As we look at the production that we are going to find from here on our, it is almost certainly going to be in little scattered deposits. A miracle could occur; it could have occurred in the Baltimore Canyon and the geologic indicators today indicate that it is not occurring. They are finding more dry holes than production.

You will recall that Texaco found some production but most of the producers have reported so far great disappointment, certainly not a bonanza. The same thing is true with the Gulf of Alaska, which as I said earlier was regarded by the U.S. Geological Survey in the '60's as the best potential in this hemisphere. It now turns out that there are seven dry holes in the Gulf of Alaska and very little in the way of prospects.

We are going to be lucky if we can stay even at today's levels of production for the remainder of the century for oil and the possibility of getting a great, bit increase in that regard is almost nil. To stay even is going to require an enormous amount of effort on the part of the oil industry, an enormous amount of money from you.

Natural gas production has been declining, as I pointed out earlier, year by year. It will continue to decline. The National Energy Act will probably stabilize it at something like the current 18 to 19 trillion cubic feet.

No one that I am aware of in the industry thinks that we will be able to turn the corner on natural gas, conventional natural gas and significantly increase that again. If we are lucky, we will get as many quads from natural gas at the end of the century as we are this year.

Let me next turn to coal. Coal is just not a happy commodity. It is dirty and miserable to mine, kills a lot of people, tears up the landscape. If you drive up through Appalachia now, you will see the remnants of the mining of 100 years ago. Those remnants will be there for 1000 years in parts of the country. People resist that and resent it. Coal is miserable to burn. There are some estimates that as many as 60,000 people per year die prematurely in this country as a result of burning coal. That is a respectable estimate that comes out of Brookhaven.

It is miserable to transfer; it is dusty to transport on coal carrying cars; it leaves a fine mist behind it. Unit trains block rights of way for long periods of time. If we really begin to move massive amounts of coal from the West into the East, we will have social discord of a very high level. Moving 15 or 20 unit trains across a given right of way in a single day is going to louse up hundreds and hundreds of grade crossings and tear up the tracks in the process. It is a tough business.

We are now producing 670 million tons of coal. We thought a year and a half ago when we put the National Energy Act up that we could almost double that to 1.2 billion tons by 1985. Now we see that there is no way. A realistic estimate today is somewhere in the range of 900 million to a billion tons, way below the estimates that we made. We will produce more coal steadily, but it is interesting to note that coal production last year was almost identical to coal production in 1918 and again in 1947. We never seem to break through 700 million tons. This year, we may make it but the next 500 million tons of coal is going to be tough. People do not like to have it mined in their neighborhoods.

Next, nuclear power. I was with one of the principal vendors, General Electric. this afternoon for an hour, listening to how they view the world. They are probably more optimistic that I am. They cannot see much in the way of new orders coming down the track; it is just too difficult for the utility industry.

The utility industry is now confronted with a 12-year cycle to license a plant, get it built, and get it on stream. It literally is a matter of "bet your company". If a coal-fired plant goes bad, you might have a year's delay in getting it on and $100 million repair bill for a bad

boiler, bad axle, turbines or whatever. If you have a nuclear plant that goes bad, you might have a $600 million demurrage bill and a four-year delay.

The utility industry is no longer interested in taking those sorts of risks. They are not ordering nuclear plants and they are not about to start. The way things are now, nuclear could be finished as a strategic contributor to our energy supplies in this country unless the process changes.

That takes us down to solar. Let us think carefully about solar. How do we use our energy? We use a lot of it in space heating. Solar can do that admirably. We use a lot of it in process heat and solar will be able to do that adequately. We can't use it for transportation until we get to the point where we are producing electric vehicles, so the transportation sector probably is not going to be invested with solar for some years to come.

The problem of electrical production with solar means is very, very difficult. Right now we can produce photovoltaic cells for about $12 per peak watt. To stand head to head with a nuclear plant, that is in competition with a coal-fired plant, we have to take that from $12 to 15 cents. That is to say, we have to produce complicated photovoltaic arrays that are going to have to stay out there and last for 20 years in order to pay for themselves for about the same cost that are now associated with producing a billboard.

It can be done and it probably will be done but it is going to take a lot of time to get from here to there and a lot of money. Next year, our solar photovoltaic or solar electric budget will be approaching $150 million and the year after that substantially larger and we will still be far away from the economics for solar.

Looking out into the next century, we have to have solar almost regardless of price because when we get beyond the current system that I have described to you by 2050, we only have two choices - actually three - go back to the caves or nuclear fusion or solar.

The Department is spending about half a billion dollars a year on fusion. My own estimate is that fusion has about a 50/50 chance of turning out to be technically feasible and if that occurs, about a 50/50 chance of being able to compete effectively with solar. That is to say, fusion is about a 25 percent probability shot.

Further, we are not looking at the deployment of three full-scale fusion plants, by 2020, if everything works like grease. What that means is you cannot have an industry by that time unless something radical occurs. However, this is a stepwise developing technology, and radical things do not develop at that end of the R&D phase. They occur at this end, down at the low-cost, scientific side, out of the applied engineering side.

We won't have a fusion industry of any magnitude until 2050. That is the sort of timeframe in which we really have to view our national investment in solar as operating. It must come because otherwise all of our eggs are in the fusion basket and the fusion basket is made of pretty

thin material. It is not going to make a massive contribution during the remainder of the century.

Let me put some numbers on it. Right now, the solar contribution mostly is hydro. Most of the remainder is straightout burning of wood and the total is 5 quads out of that 80. By the end of the century, doing what we are doing today, that will be 10 quads. If we make a virtually forced draft of it, we could increase that into the range of 15 to 20 quads. That is very significant, but it does not bridge the gap that I have outlined here for you, looking at these other failing systems, because indeed I regard these other systems as essentially failed.

What are we going to do? There is an enormous requirement out there of 110 to 120 quads. That is going to come if we are successful in doing what we have done now for more people; that is to say, getting our GNP extended. The Catch 22 of expanding the GNP is the virtual certainty that we will require 50 percent more energy at the end of the century than we do today.

We are not going to get any more from domestic oil, probably less. We are not going to get any more from domestic gas. We are going to get some more from coal but not enough to save us. We are going to set some more from nuclear, almost entirely from plants now under construction, not from new orders. We are going to get a substantial assist from solar but we still have an enormous debit. What are we going to do about it?

Let me tell you what the policy of this country has been up until just the last few months, until last October: when in doubt, import. I mentioned earlier the four-year debate over whether or not we bring Alaskan oil down through the Alaska pipeline. Let me remind you that it was finally resolved by a Congressional Act that said National Environmental Policy Act no longer applies -- effective force majeure.

Otherwise, the debate on whether the pipeline should be built would still be going on. However, the length of the debate meant that for four years we imported a million barrels a day and more that we need not have imported and paid $5 billion a year in the form of balance of payments outflows for it that we need not have paid.

So it is every time we say to ourselves we will defer, which is a polite way of saying cancel and review planning. In New England, it means that old oil-fired plants up there are going to run for another 5, 10, 15 or 20 years importing every drop of the oil they use and putting another grip on the balance of the payments.

So it is when we are unable to deal with the pipeline problem of taking that oil off the West Coast and bringing it where it is needed. It means that the people who produce the Alaskan oil are forced to resort to a U.S. tanker that charges $5 a barrel to move it around to the Gulf where it is going to be used and it means that their net back in Alaska is reduced by $4 below that which would be obtained if the pipeline were there. It means that the producers simply don't want to expand their Alaskan production any. They would rather keep the oil in the ground because they know, at some point, they will find a better system, either exporting the Alaskan

oil or finally getting that pipeline built and not having to eat that $4 per barrel transportation cost.

Consequently, today we are importing as much as 400,000 barrels a day, simply because we couldn't handle the glut problem in the West Coast sensibly, and so on and so on.

The policy of this country, up until the President's signature on the National Energy Act two months ago, was to import whenever we ran into any domestic problems and to tell ourselves that there really wasn't any problem at all; plenty of oil, plenty of gas, just the greedy oil people trying to jack up the price; don't need nuclear, don't need coal, get rid of the oil monopoly and depend on solar and you will be saved. Terrible.

If we continue to believe that, the legislation that the Executive Branch sends up to Congress will continue to be watered down and not be adequate to deal effectively with this problem. Take fuel switching, for example. Congress badly watered down a piece of legislation that would require utilities to get away from oil and switch to coal. The conservation bill that we sent up was badly watered down. We wanted a very simple standby tax on gasoline, just as one example, to curb demand, and couldn't get it.

One vote sticks in my mind. Rep. Thomas L. (Lud) Ashley offered a resolution bill to the House for a four-cent tax on gasoline. It went down 377-55. What sort of a world do we live in when we can drive when we want, as fast as we want, in any sort of a seven-miles-per-gallon recreational vehicle that we want, saying that the whole business is a price conspiracy by the oil industry and at the same time know that half, or at least a substantial portion of the inflation that is killing this country, is attributable to the fact that we are bringing in $40 billion worth of oil a year and $50 billion next year, and we cannot affort it?

I tell you, as a fellow who spent his life in government trying to understand what the public interest was, the experiences of the last two years rubbing shoulders with the realities of the view of this country and Congress in the energy arena have been a horrible experience. To see this country headed for the brink, to see us with the people and the resources that can turn us around and bring us back into a fair haven and to see us frittering time away. We are no better off today that we were in 1973. We have no live alternatives and my personal efforts, and the efforts of my Department, to inject live alternatives into the system run into enormous, bitter opposition.

The big job then, I think, is to understand the problem. You don't have to view it as I have given it to you here tonight. Come to whatever your own understanding is, but don't accept the placebo that there is plenty of oil and gas out there and solar is right behind us and all we have to do is go for divertiture and we will solve the problem or that Mexico will solve it for us.

As I indicated earlier, I was just down in Mexico and my own view is that they are going to use their oil at a rate that is comfortable for them, not at a rate that is destructively inflationary to their economy and not to accommodate us.

DR. STEWART: Do we have any questions for Mr. O'Leary back here?

VOICE: You mentioned that the only major discovery of oil and gas, particularly the gas, in the last 20 years was the Prudhoe Bay Field. Were you saying that the Anadarko Basin is not paying off in the deeper wells?

SECRETARY O'LEARY: Anadarko was discovered, as I recall, in 1912.

VOICE: I meant the deep well portion.

SECRETARY O'LEARY: Fine. Anadarko was paying off in the deep well portion, San Juan is, but the fact of the matter is the Anadarko Basin was completely delineated, I would say, by about 1925. The production that we are getting out of there, the first deep well that I recall out of there, Council Oaks, 20,000 feet was about 15 years ago.

VOICE: That is what I was referring to, that particular lower basin. I thought that was considered a fairly appreciable amount.

SECRETARY O'LEARY: I think that is a very interesting thing. I think like the shallow of Anadarko though, this is an important part of the debate because in fact we are going to depend upon the giants, these massively substantial deposits. We are not finding any more and the gentleman puts his finger on a very interesting sort of a proposition.

The mystery and mystique of the oil and gas industry is, we found so much down to about 6,000 feet. Virtually all drilling they were doing in this country has been shallower than 6,000 feet. When we go the next 6,000 feet, the theory was that we would find as much, and when we get the following two intervals of 6,000 feet down to what are today's technological limits, 24,000 to 30,000, we would have several other replications of the past.

The point that I want to make here is that is not happening. We were able to find the easy shows on the basis of surface indications and as yet, at least, we are not sufficiently sophisticated in seismic techniques to be able to see 30,000 or 20,000 feet down with the same degree of validity as we were able to see only 5,000 or 6,000 feet down 50 years ago.

Let me give you another measure of that. King Hubbert, who up until recently was an employee of the U.S. Geological Survey, did a very interesting statistical analysis of oil findings per 10 million linear feet drilled in this country; the same thing was true of gas, so the example holds.

He divided history not into episodes of 5 or 10 years but rather into periods of which 10 million feet linear feet had been drilled. In the first of these epochs, and there are now perhaps 25 here, his bar chart is like that (indicating straight up) and the second one is also very high.

Remember the first epoch was from roughly 1859 until maybe 1870 or 1880, very, very primitive, cable tools, geological service indications only, no seismic capacity, no nothing, just see a slick and go out and drill or see a mound and go out and drill. Success then, per million feet drilled, was very, very good.

The next 10 million feet was very, very good; the next 10 million feet very, very good. The next 10 million feet was not so good, so the curve does down until for the last 5 or 6 of these intervals, it has been flat, relatively like an inch compared to 2 feet.

That is the point I think we must bear in mind, that we are running a technological race, and of course, this would have gone to zero unless we had broad technology, both in finding and getting. You could not get to 20,000 feet for example, 50 years ago, and even if you had a certificate saying the gas was there only 20,000 feet down, it would not have had any value.

The technology of both finding and going after the gas has advanced enormously over this period of time. Thus, we are able to hold our own, but with much more difficulty than during these easy days, when we were finding all of this oil and gas with each 10 million feet drilled.

We are now, despite the infusion of an enormous amount of technology, finding it in a very much smaller amount.

VOICE: Mr. Secretary, what are your feelings about the substitute fuels from gas and liquids from coal and the shale oil possibilities?

SECRETARY O'LEARY: I alluded to those when I said that the Department had made very, very significant efforts in the course of the past year to take the most advanced of these technologies and bring them on. There is enormous resistance to bringing these technologies forward. I, frankly, do not understand it.

We were making, in my town of Reno, Nevada, when I was a wee lad, 70 or 80 years ago, town gas out of coal. That technology has been largely lost now. It is inexpensive and very primitive technology but certainly you can make a natural gas substance out of coal. The first of those plants is at least 100 years old.

There were sufficient advances in that technology, particularly during the period of the '20's and '30's in Germany, to bring it within reasonable economics, reasonable in terms of the future price of oil. We will probably not encounter another quadrupling of the oil price as we did in '73-'74, but almost certainly in the next 10 years, it will double. We can probably bring in synthetic fuels at roughly that next juncture, that next doubling. What I suspect we will do is we will wait until they double and then we will make the necessary investments to bring on old technology. These technologies are essentially Fischer-Tropsch and hydrogenation. I guess the most common technology that we will be using in the years to come is the old Lurgi technology that was started in 1926. We will make the investment then in these old technologies and lose in the process as much as 15 years.

My own view is technologically there is no particular trick to making very, very large quantities within the range of price of both gas and oil. Politically, I see little likelihood that we will be doing either within the next decade.

With regard to oil shale, we are told by the oil shale companies that a relatively small tax credit of $3 a barrel with a lid of $20, at what point the $3 tax break would disappear, would be enough incentive to bring out investment in several plants of 50,000 barrels per day each.

I have heard this sort of talk ever since I was, I should imagine, in my early 20's. I will believe it when I see it or I will see it when I believe it, or some such construction, but I think it is worth a try. I think if we can say to the industry that we can generate the beginnings of what could very well be a strategic contributor to energy options in this country with that sort of a tax break, it will be, in retrospect, a bargain to the people of this country. We proposed the $3 tax credit and it got close in the last session of Congress, but at the last minute, along with so many other things, it was aborted, so it did not happen. These things are always just about to happen; it seems to me they never quite happen.

VOICE: Mr. Secretary, have you found any relief in our promise of tertiary recovery from the old oil fields?

SECRETARY O'LEARY: Yes and no. The question was have we found any relief from tertiary oil from old oil fields? We know where one pot load of oil is. We are able to produce only about 30 percent of the oil that we find now in this country and we leave the rest of it just sitting there.

We have increased that, incidentally, up to recent years, by about half a percent a year. Right after the war, for example, we were producing about 15 percent of the oil originally in place and I would say the figure now approaches 31 or 32 percent.

The question is, can you go out and really get a sweep of a field and get recoveries of 60 and 70 percent? The answer is yes, in some places it is being done. We had a surprising number of tertiary floods in this country; there were probably 200 as we stand here, but there total contribution to production is under 300,000 barrels.

You think about tertiary contributing another million barrels a day over the next 5 to 10 years and it is a massive chore. The difficulty with it is that it is very energy intensive.

The forms of enhanced oil recovery we are finding most successful today are literally steam drive where you have a steam generator on the surface, produce steam intake under pressure into the reservoir, into a given well for a month to 3 months and then reverse the flow. By that time, you will have heated the heavy oil. This is particularly applicable in places like California where they have large deposits of a very fiscous oil.

The steam heats the oil, lets it flow, and it will return up the pipe and may be pumped then. That pumping may go on for 3 or 4 months. Finally, it will dwindle down and then we start the cycle again of injecting the steam for several months, then retrieving the oil. You can see that this is energy intensive.

Other forms also tend to be intensive in energy materials. There are a number of chemical floods going forward. The chemicals are almost adsorbitants, almost sure, unfortunately, to be oil derivatives so you are using a very substantial portion of your net return in winning the oil. It is just a matter of the economics not being right.

However, I suspect that if I am correct in my view, the quick price for oil in the world will go to the $25 range within the next seven to eight years. Then there will be a flourishing enhanced oil recovery industry in this country.

VOICE: I noticed you did not mention alcohol as a gasoline substitute. Is there some reason for that?

SECRETARY O'LEARY: Well, I tell you, I like alcohol. The question is, why didn't I mention alcohol as a gasoline substitute. In a way, I did, in a tricky way; the Fischer-Tropsch technology produces a methanol, but you are really thinking of something from grains.

If you take a look at the potential here, you can probably meet about six percent of your liquid requirements, if you were able to collect all of the collectable garbage in the United States and bring it to gas.

It is possible to make a significant contribution but if I can distinguish between a strategic contribution such as that we now receive from oil and coal and a tactical contribution, garbage is purely on the tactical side.

What you do with garbage is you find ways to reduce the cost of getting rid of it. A lot of the cost is associated with land acquisition and the haul to the land. In New York City, for example, probably to haul it to land and a landfill, it would cost $30 a ton.

If you could get $10 a ton back in the form of energy, you could significantly reduce the net outlay of the taxpayers of New York. It would not make it economic per se if you had to pay for the garbage and pay for the haul but as an offset to the haul and to the land disposal, it does make a great deal of sense.

I think we will see a lot of it and we are already seeing an enormous amount of interest in it under our experiments of one sort or another with garbage conversions, picking up all over the country, including one or two successful ones.

The economic concern, Wheelabrator-Frye for example, has an outfit outside of Boston that is working and it appears to have relatively attractive economics so I think we will see more of that as the haul and land costs dictate.

With regard to growing corps and then producing alcohol from those, as close as I can figure, you are looking here on a Btu equivalent with gasoline, for example, at about $2. Some would say $1.50. That is without the tax; that is at the refinery and a lot of it is being produced now. Let me say a word about that technology.

Mankind has been involved in the conversion of cereal grains into alcohol for a good 15 to 20 years, maybe even longer, (laughter) so we know what the technology is and we know what the costs are. There are large distilleries all over this country, for example, using fairly advanced technology.

It is not the sort of thing where you are going to have a radical breakthrough which will permit you to significantly reduce costs.

The reason the farm belt is very interested in this, why it is a very big item in Nebraska, is because they are burdened with surpluses and they would very much like to find a way to offlay those surpluses.

Let me ask you to think about this. You build a big refinery and the surplus disappears, say as a result of famine in Russia. Faced with crop failure elsewhere in the world, where does the wheat go? On humanitarian grounds, it does not go into the distillery. It goes out, in all likelihood, so you cannot look upon this as using surplus. You have to look upon this as dedicated acreage, dedicated for that purpose.

When you begin to put together all of those economics, you will find that you really do not like what you find at the end of that rainbow. We can get methanol from coal for probably half the price of methanol from grain. If you look upon it as a matter of strategic contribution, we have an enormous amount of coal and there is an enormous potential for the production of menathol.

As a result of all of the interest we are getting now, this last year, we spent some money in some investigation to find out if there is some normal technology for ways to deal with the uncertainties of surplus. Unless something comes on, that is not now foreseen. I do not believe that we will see a strategic contribution, although it is to be sure there can be a significant tactical contribution from the growing of grain for the production of alcohol.

VOICE: Could you enlighten us at all on some experiments in Louisiana on geopressurized methane?

SECRETARY O'LEARY: Texas.

VOICE: I think it is Louisiana.

SECRETARY O'LEARY: It is 30 miles outside of Houston. When I was down there dedicating a well on a very hot day in June, they told me it was Texas. All around the Gulf there are pods of hot water, lensmatic in shape of varying sizes, some small, some big, at depth, hot, briny and saturated with methane. The oil people have been running into those things for generations and they don't like them.

When I described natural gas prospects I spoke of natural, convention sources. As the price of methane has gone up we can now begin to talk about the occult -- unconventional natural gas. These deposits clearly are there and clearly are laid in with natural gas and involve some very interesting problems.

First of all is the temperature. You are dealing with 300

degrees or thereabouts. Secondly, they are under very, very high pressure. Third the well we are drilling in Texas is 16,000, close to 17,000 feet and costs $6 million. You have to have a flow rate of 40,000 barrels a day to make a well work.

The first concern we have, and we are not beginning to produce that well, is at some point, well before 40,000 barrels a day, we will begin to poll that formation of the well. That is a problem. It may be that we can lick that problem by multiple depletions. We are not really putting that much of a pressure differential right at one point in the reservoir, so we will try that. We will try gradually stepping up production to see what happens.

The second think you have to do is you have to get rid of 5 tons of water for every mcf of gas, very large volumes of brimy water. Then there is the shrimping interest and other commercial fisherman do not want you to put such large volumes into the immediate onshore area or into the fishery area that you begin to change the salinity.

In order to get the volumes of natural gas that you want, you run the risk of changing the salinity so you are either going to have to take it way out in the Gulf, and that is going to be expensive or reinject it into the formation.

In the Long Beach, California, area, before the operators begin to reinject sea water, they had a subsidence of 22 feet and you could do that in spades on one of these pressurized things, pouring out these enormous quantities of water to get strategic quantities of gas. You have to take one tremendous volume of this geopressurized water out and you are going to have subsidence problems wherever it is produced.

Finally there is the problem of volumes. In order to make one of these things work, you have to have, behind that well, about three cubic miles of this lensmatic structure. It may be that there is a lot of this stuff, but we are not at the point where we are only beginning to characterize the reserves or resources down there and we do not know whether there are a lot of three-mile deposits or just very few. It is an extremely interesting possibility at the moment.

If you had to put a number to it, 50/50 if it works, what a bonanza. It could turn the natural gas situation in this country around. It could begin to turn it around as early as 1990. If it does not work, it is just another great idea and right now, it is at that point -- very, very interesting, but unfortunately, the assertion that this cures the gas problem was about 5 years early.

VOICE: I notice in your scenario for 2050, you mentioned the fusion reactor and the solar but you did not make mention of the breeder reactors. Do you see any future at all for the breeders, either technical or strategic?

SECRETARY O'LEARY: It depends entirely upon how people feel about it. What you all think of breeders, but let me put the question in these terms.

If you had the vote and your vote was yes, we are going to have them or no, we are not going to have them, how does this audience

vote? How many are for, yes, we are going to have the breeders?

(A show of hands.)

SECRETARY O'LEARY: And how many are for, no, we are not going to have breeders?

(A show of hands.)

SECRETARY O'LEARY: I would say that's unusual. You have here probably a 60/40 split in favor of having breeders. The one that I made with regard to the light water reactor, that is to say, conventional nuclear fission, as we understand it today, really took into account the point there. We sure as hell are not going to need breeders unless we have light water reactors in much larger numbers than we can now foresee.

Let me give you a little rundown, a little numeric here, that I find of great interest. When I was with the good AEC, we made all sorts of projections. We were saying in the year 2000, we will have 50 percent of our electrical energy produced by nuclear plants and there will be 1200 of those little devils kicking around out there, 1200. That estimate was made in 1973.

I would say the DOE estimate today is 380; my estimate is 200. I have been much more consistently right in making these estimates than anybody else in the business. For example, just a few years ago, the ERDA estimate was that by '85, we would have 285 gigawatts of nuclear generation by 1985.

To '85, at that time, my number was 110. My number is still 110. They now agree, so here is a forecast. My track record has been respectable. I say that we are not going to have more than 200 plants.

With that sort of situation, you simply have no sort of place for breeders. I think there is no question about the technology. If you will recall, the first power reactor we ever had in this country, as early as 1952, was a breeder.

The French apparently can build them and we are almost as smart as the French and could probably build one too, but I tell you, you want to get into political problems, they are a lot of fun. I do not think we will do it; I do not think we will see breeders until there is an entirely different attitude towards the whole fission business.

Incidentally, I regard that as a tragedy. If you take a look at the environmental and social and health costs of coal versus nuclear, there is just no way coal can compete with nuclear. It is cheaper from the standpoint of the environmental costs, probably one order of magnitude less and from the standpoint of health costs, it appears that it is more on the order of two orders of magnitude or maybe even more.

The American public does not like nuclear energy; women do not like them, particularly because they look upon them as an attack upon the genetic stock of civilization. They were caught up in concerns about half life.

What I am concerned about are things like lead and cadmium but this half life, that will just go on poisoning you forever and forever.

Nevertheless this country is just turned off on nuclear power and I do not expect to see it turn around for the remainder of the century; as long as we can get away with importing oil, we are not going to do it. It is a sad commentary.

DR. STEWART: May we have one other question, please?

VOICE: Mr. Secretary, in the early 1960's when President Kennedy instilled in the American public a sense of urgency that we had to get on the moon within 10 years, with a massive influx of governmental monies, at one time, it was estimated that we had over 50 percent of the PhD's in this country and in one way or another working in this administration.

We did, in fact, reach the moon in 10 years. My question is, why can't we instill that sense of urgency through the Administration to the public that we need to develop alternative sources of energy? It seems we are asking entrepreneurs in the private sector to guide us with small incentives from the government, monetary incentives, into the solar age.

Why can't the Administration instill a sense of urgency into the government, in our legislators, to fund a decent program to guide us into a new era of energy?

SECRETARY O'LEARY: It depends, I guess, on what you think a decent program is. As I said earlier, the 1980 budget for solar will approach a billion. The 1980 budget for fission, principally on breeders, will approach a billion. The 1980 budget for coal conversion will approach a billion. The 1980 budget for conservation will approach half a billion -- no, it will approach a billion because we have things coming out. We are spending $4 billion and nobody begrudges that money.

As a nation, we apparently are quite willing to spend enormous amounts of money on research but we are not willing to spend money on development. It is something that really confuses me, I tell you.

The point that I made earlier with regard to coal comes from a bitter experience over this last year. I have spent untold hours trying to get the first three synthetic fuel from coal plants built, one for liquid, one for a clean solid and one to produce natural gas. I tell you it feels to me sometimes that what I am doing is running my head against the wall.

The decisions keep bouncing up and down to the President like a yoyo. It is not a matter of instilling or anything like that. I really quarrel with your hypothesis. I would say that 60 percent of all of the solar activity going forward in the private sector today is going forward one way or another because of the money we are putting into it, principally the buys we are making, so we are really doing our best to try to get the money out there.

It is just that we have to decide that we have a problem. It is the point I was trying to make in the first half hour that I spent with you. You go talk to the Congressmen as I do everyday, during the Congress season, and you find this repeated theme. This is a ripoff conspiracy by the oil industry.

What you guys really ought to do, they say, is make the oil industries divest. There is no feeling there is a real problem underneath this. The papers don't play a real problem. Well, the President used the phrase, "the Moral Equivalent of War" on April 20, 1977, he was ridiculed, but it is the moral equivalent of war. You can heap any amount of ridicule on me you wish for the reiteration of that but there is just no feeling of urgency here and why should there be? The papers tell us we have a lot of oil. The gas tank tells us that the price of gas just went down two cents; heating oil, in real terms -- and this is a shocker -- is cheaper than it was in 1963. Gasoline is cheaper in real terms than it was in 1963.

We continue to keep price controls on both oil and gas. Now why should anybody take this seriously? So I do not know what you do. As I say, that is the crucial problem. How do you get you, you and you thinking about this and knowledgeable enough about it so that you can make up your mind, yes, there is a problem?

It is a problem, a hell of a problem. It is a problem that unless we deal with it more effectively, we've ruined this country. How do you get that word -- well, goodnight to you.

(Applause.)

DR. STEWART: Thank you, Secretary O'Leary, for this most informative presentation. You set the stage for a national conference. I know you are anxious to leave but we do have a few housekeeping remarks.

(Whereupon, the opening session concluded at 8:25 p.m.)

Text of the Address by The Honorable Cecil D. Andrus
Secretary
The Department of the Interior

With introductory remarks by The Honorable Ruth C. Clusen
Assistant Secretary
Environment
The Department of Energy

ASSISTANT SECRETARY CLUSEN: Thank you very much. I think you can tell from the description of my responsibilities at the Department of Energy why I am glad to be here to do this, because this is certainly the kind of conference in which the joint aims of energy and the environment are joined.

In addition to that, of course, I could never resist the opportunity to say even a few words at any conference which espouses public awareness of public issues, given the fact that I have been a lifetime advocate of exactly that.

I think, since I had no part in the planning of this conference, I can also congratulate another part of the Department of Energy for its foresightedness in putting together exactly the factors which must be joined in any kind of balanced decision-making on energy issues, and I hope that you make the most of the time you have here together. I am sure you will.

But most of all, I am glad to be here because I would no way resist the invitation to address the next speaker. I know from the things he has said and done that we share common views: The belief that we can have both a clean environment and an adequate supply of energy; a belief that balance is the key, that people do not want to turn back the clock to the wasteful times of the past decade.

Our speaker has not only articulated these ideas, but he has proven them in the hard realm of politics, of ogernment, and of employment himself. He has a strong belief that the quality of life should not and will not be sacrificed to economic development.

He served two consecutive terms as the Governor of the State of Idaho following a career in the State Senate in Idaho. He was, at the time he was nominated to the cabinet, the Chairman of the National Governors' Conference in 1976. But I think he is perhaps remembered most of all as a strong advocate of the legislation which put five rivers in Idaho into the National Wild and Scenic Rivers Act.

I would like to quote to you a couple of things he said at that time and since. He was strongly opposed on that particular point in parts of Idaho because there was some feeling that there were too many wild rivers in part of the system already and that no more could be afforded.

In fact, his opponents said, "We cannot afford to sacrifice any more," to which the Secretary replied, "We should be so fortunate in other areas as well. To preserve is not to sacrifice or destroy."

And then shortly before he was sworn in, he made clear where he stands by saying, "We have to make a living, but after we make a living we have to have a living that is worthwhile."

About a month ago it was my privilege to appear on the same panel with him at a conference in Memphis. His direct and unequivocal answers to some very difficult questions, particularly in the realm of water resources, earned him the respect of the audience and the panelists, as well.

Therefore, it is a particular pleasure for me to introduce to you the Honorable Cecil Andrus, Secretary of the Department of Interior.

(Applause.)

SECRETARY ANDRUS: Thank you very much, Ruth. Good morning, ladies and gentlemen.

Now that you have pulled the environmental hat right down around my ears for me, Ruth, I will try to achieve some of the balance that you spoke of. I, too, would like to offer my congratulations to the co-sponsors of this conference. I concur with what was said earlier, that this group--and particularly the educational portion of this group--could well be the glue that binds together the diverse beliefs, needs, desires of the people of America as we move towards this critical balance.

Gene, I would like to say that I knew we had something in common. I find out in your introduction that you received your education from Georgia institutions. Well, I would say to you that I, too, am receiving some of my education from Georgia institutions. (Laughter.)

I am pleased that you are here. The Department of Energy, under Jim Schlesinger's guidance and the outstanding individuals that he has on his team, are to be congratulated for their desire to bring about solutions to these problems.

Jim Schlesinger is very knowledgeable in many fields. At a cabinet meeting yesterday morning, Jim was talking about one of his children. He mentioned that he and Mrs. Schlesinger are looking at universities and colleges. I said, "Well, Jim, what does she desire to study?" Jim told me that he would really like to see her at a land grant college where resources would be available to her to further her education in the environment, energy, and other such subjects.

I said, "Did you by chance take a look at the University of Idaho? There is a land grant college that can offer a great deal." He said, "Yes, we did, but we found that out there all they have are football players and girls with bad reputations."

I said, "Jim, it is funny you would mention that. My wife graduated from the University of Idaho." (Laughter.) He said, "Well, what position did she play?" (Laughter.) So, he is swift and able, as you will see tomorrow when he speaks to you.

In my introduction and other comments that have been made here this morning, we again have referred to this balance, and any time that you talk about energy, education, environment at a business and labor conference, we have to address the balance situation.

The problems we face can be brought into focus by considering what is happening at the very time of our meeting, and what will happen in the immediate future.

For example, from this moment until I finish my comments this morning, some 5,000 new babies will come into the world. By the time that I reach retirement age at about the end of the century, there will be somewhere around 8 billion people, roughly double our today's population, in the world.

During my lifetime--sometimes I feel lengthy lifetime and other times relatively short lifetime--the U.S. population has increased from

about 125 million people to more than 220 million.

I don't come to you this morning to discuss with you population growth or birth control. That is really outside of my field. But these staggering world population figures indicate the tremendous challenges that we face in trying to meet the employment and the material needs of nearly 4 billion additional people in the world.

What I want to address this morning is how we go about answering this challenge of an expanding population in a finite world, where the outer edges of our frontiers have already been reached. Some clues to our future and what we will have to do can be found it we will look at our past.

To a large degree, the rapid economic growth of the United States was achieved at a very high cost to the environment of America. When we Americans used up the resources in one place, or one place became too crowded, we just went over the hill to virgin territory and started again.

There were a few voices in the wilderness who warned that we were unnecessarily degrading the land, that we were killing too much of the wildlife or depleting the resources, but our country was really about one century old before the first token efforts at conservation were undertaken by the Federal Government and by the public entities throughout America.

In the past decade, however, we have indeed made some very rapid progress. As we approached the Bicentennial, there was a consensus in America that we had -- and I will use my phrase again, Ruth -- that we had to make a living, but after we had accomplished that we had to have a life that was worth living.

Now, ours is the first generation to face this issue squarely. President Carter is the first President willing to meet these difficult issues head-on. Economically and environmentally, the President and I are pay-as-you-go people. We want a balanced budget so that the costs for the benefits and services of today are not transferred on to future generations.

We want a balanced program of resource development, conservation, and reclamations so that the environmental costs of material goods and the energy we consume today are not left for us or our children to pay in the future. We want to leave a little something in the way of resources and in the way of options for the future.

I don't think any of us have an ego so great that we truly believe that we have to make all of the decisions for the next hundred years. Our greed today could sentence future generations to poverty, and we reject the imposing of that legacy upon future generations.

The Surface Mining Act, the law that was passed in 1977, is a good example of the commitment to pay as we go. We simply want to be sure that when coal is removed, the surface of the land is replaced and repaired so that that same land will be available for another use. In other words, instead of the way we have done it is past years in many places, the strip mining should be a temporary use of that land.

Keep in mind what I said in the opening, that there are no new frontiers to move into. We know where we are today. At the same time that we are recognizing that these types of operations should be temporary uses, we have accelerated our efforts to repair the damage done in the past by those miners who perhaps did not think of or realize the legacy that they were leaving.

Are these things inflationary? Does this impair our ability to produce energy? They are good questions, questions that have to be answered, questions that you will address here in your conference.

It is inflationary only in the sense that today we are paying the full cost of surface mining of coal rather than ignoring part of that price. The cost of coal today is relatively higher because it was not fully paid for in the past. There is no contradiction between the Carter administration determination to increase the use of coal in America and our determination to see that it is mined with the least environmental impacts.

I believe that competently managed companies using modern technology can mine coal and reclaim the land, and make a profit. Ladies and gentlemen, they are doing it.

I believe that the commitment to environmental protection, whether for coal, petroleum, or other uses of the natural resources, will mean more jobs in the labor market, rather than fewer. There will be additional jobs for those people out there reclaiming the land and those people manufacturing the equipment necessary to protect the quality of the environment.

It will mean more jobs in the long run because rather than leaving behind a desolate path of destruction, reclamation will leave behind areas which will retain their value for additional uses in the future for economic enterprises, for recreation, or for the regeneration of nature areas, fish and wildlife habitat, watershed protection, and others.

Now, I have used the coal mining situation as an example here. What I am talking about is all of our natural resources and the cost of using them versus the cost of abusing them, and each one can be computed in dollars and cents.

One point which has distressed me is the fact that when we discuss issues involving energy, jobs, environment, and all other things that you are talking about here, we have the human tendency to categorize people and to polarize people. One person is an "environmentalist." Another person is a "digger" or a "developer." Another is a consumer advocate," and so on and so on and so on. Well, we tend to think of ourselves as being one of these, you know, the good guys or the bad guys. Well, I submit that all of us, all of us in America are consumers, all of us are developers, and all of us, when you scratch deep enough, have some environmentalist in our makeup.

The self-proclaimed environmentalists frequently use and enjoy the benefits of our industrial society a great deal more than they would like to admit. Indeed, in today's world, we must have high technology to help us achieve our environmental goals, but keep in mind that the union workers, the businessmen, those developers, who must have

natural resources for their very bread and butter, usually are the ones who enjoy hunting, fishing, or taking the family out on a camping trip into the great outdoors.

Likewise, who among us in this room is not a consumer? Who among us is not concerned about rising prices for the items that we want and need the most? We can raise the level of debate over energy and natural resource issues considerably if we can encourage people to understand the many hats that each of us wears.

There was one school of thought a few years back that the public environmental awareness of the early 1970's would quickly run its course and there would be a backlash against environmental protection by the end of this decade. That has not happened, and I submit to you that it is not going to happen in the 349 days that are left in the decade of the seventies. Inflation or not, recent opinion polls confirm what my travels around America these past two years have led me to believe. Americans -- and I mean the white collar, the blue collar worker, the T-shirt wearer -- all of them are deeply concerned about conservation and environmental protection.

They want to be sure that there are enough jobs. They want the energy that we need. They want the raw materials that are necessary for a higher standard of living. They are deeply concerned about inflation.

They would like to bring back some, but only some of the aspects of the good old days. One part of the good old days, which I believe most Americans today reject and it is clearly reflected in the polls, is the philosophy that the best way to produce energy and the best way to extract natural resources is always the cheapest way. Not so. They recognize that there is a price tag on those commodities I mentioned earlier.

People are beginning to realize that what once seemed free is not free. In fact, it never was. Clean air in an industrial society is not free. Clean water in a heavily populated area is not free. Good hunting and fishing or other enjoyable outdoor recreational aspects, by no means are free. What we are attempting to do at the Department of the Interior is to increase the production of energy, of timber and other resources from the public lands, while taking adequate steps to maintain the quality of the environment.

We are trying to strike that balance that everybody talks about, between extracting those resources that are needed by our society and preserving those resources essential for the good health of the natural world in America.

Interior is not the only place where we have to look for that balance. It is not the only place that has a responsibility for this, but it probably is the place where we have more impact in government, because we are charged with the responsibility of thestewardship of those millions and millions of acres of your real estate.

I sometimes kid Mike Blumenthal, our Secretary of the Treasury. I say to Mike, "You keep the books on a daily basis, but we over in Interior really have the wealth." We have responsibility for much of the Wealth of America because the Department of Interior has jurisdiction

over the leasing of the Outer Continental Shelf for oil and gas, onshore oil and gas leasing, hard rock minerals, timber resources and other natural resources on and under the Federal lands.

Now, let's look at another example. Let's look quickly at Alaska as an example of the clash between the need for development and the need for conservation. This may seem strange, since Alaska does have so very few people living up there. But recently that north country has become the focus of our most ambitious and most successful effort to reconcile the apparent conflict -- and I say apparent conflict -- between protecting our environment and making the resources available for the economic needs of the people that live there and the people in the Lower 48.

Acting under a directive of the 1971 Alaskan Native Claim Settlement Act, this administration recommended to the Congress the establishment of 92 1/2 million acres of new national park, wildlife refuge, national forest, and wild river areas.

When the Congress was unable to complete the action before it adjourned, we in the administration moved to protect that land through a combination of national monument proclamations by the President and administrative withdrawals by myself.

Choosing the areas to be protected was, ladies and gentlemen, an immense job and one of the most difficult decisions I have ever made. For one thing, in Alaska, the spectacular is mundane. Places that would long ago have been brought into the national park system, if they were in the Lower 48, are simply average up there. So, we knew that only the crown jewels of that area could be protected. This meant those few areas that were the richest in wildlife habitat, the highest and most spectacular of the mountains, or the more important of the scientific sites.

At the same time we know that Alaska is a vast storehouse of petroleum and minerals which our nation needs now and will need in the future. The problem was the same old one: How do you balance the interests in a way that you recognize both without tipping the scales too far one way or the other?

We also realized that the wild lands themselves probably will be one of the state's greatest assets long after the last lump of ore has been extracted. Americans will still be going to that state to enjoy the wild places, to hunt, fish, see the animals, breathe the clean air. Tourism is destined to be one of the premier industries of the state of Alaska.

Last year, they brought in, through tourism, more than $150 million to their economy. Eventually more than two-thirds of Alaska's 375 million acres will be available for development. The state is receiving 104 million acres, the Alaska natives are receiving 44 million acres to settle their aboriginal claims, and more than 100 million acres of federal land will be available under BLM for use in development in the Multiple Use Agreement.

Now, how did we draw the lines on the map? We used a computerized resource inventory prepared by the state of Alaska to locate the highest resource areas up there. Then, we carefully drew our boundaries

to exclude 90 percent of the high potential oil and gas areas and 70 percent of the high potential hard rock mineral areas, and we excluded the more than 358 million acres offshore from protective covenances.

As America's need increases, Alaska's nonrenewable resources will be available, and equally, so will Alaska's renewable resources. The fish and game up there attract many visitors, but commercial fishing -- just the commercial aspect of fishing, disregarding the sport fishing in Alaska -- is still their biggest nongovernment employer, and it looks like it can only grow.

But Alaska's very rich ocean fisheries are dependent upon the source of clean water that flows from the wild lands of the interior of that state. To destroy the water quality is to destroy the fishing industry. Indiscriminate action in some of those watersheds can either destroy the water quality or destroy that balance in the spawning beds that we must protect to protect one industry.

It is not going to do us any good to exchange one industry for another. In Alaska, we have the unprecedented opportunity to plan how to best develop and how to best conserve the vital resources of a large area with complete ecosystems and that have relatively little intrusion by man.

We do not have to make the same costly mistakes up there that we made in the lower 48. Our plan will provide the opportunity to use Alaska's energy and minerals without abusing its greatest scenic beauty or its magnificent wildlife.

Ladies and gentlemen, in pouring over the long and intensive studies of Alaska, I have become convinced that we, the American people, can make intelligent decisions regarding our natural resource development. We have done it. We just must do more of it.

We do not have to be the dumb victims, if you will, of random actions by economic interests or by uncoordinated federal actions. We have the unique situation in Alaska where one federal governmental agency -- and that is basically our agency, Interior -- was in charge of proposing the federal land policy.

Whether you agree or whether you disagree with that proposal, we laid out a plan for all to see and all to debate.

This is the way our government should operate: decisions openly arrived at and publicly debated, and then implemented by the elected officials responsible to the people.

I would hope that we can expand the process to encompass natural resource policies not just for one state, but all across America.

In conclusion, I might express my congratulations to the parents of those 5,000 plus babies which have been born since I began speaking. I would like to say that I am confident that we can meet the challenge of providing the energy that those people will need, but we can do this if we will pay the full price of it as we go and not cut corners by leaving environmental damage as a debt for future generations to pay off.

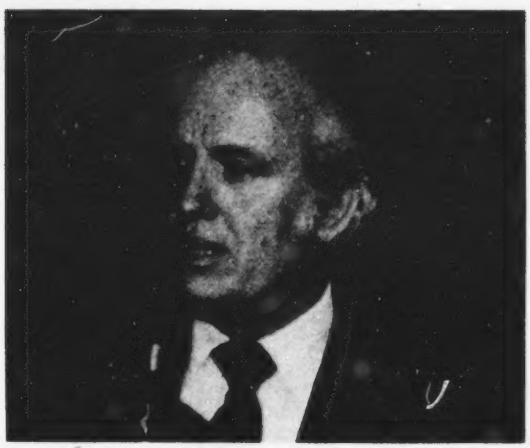
In all our decisions at the Interior Department -- and Alaska is a good example -- we have tried to achieve a balance between the amount of resource development needed for economic prosperity and the amount of conservation essential for the environmental good health of the world.

With your help, we can expand that dialogue and we can make informed decisions on our future. You might say that all of us are in the same lifeboat together. If a major lead develops in the economic end of the boat or in the environmental end of the boat, we could sink together. With a little bit of cooperation, some organization, and a great deal of hard work by the people that are represented in this audience today, we won't sink. We will be doing our best to prevent any leaks from occurring, but if a leak should occur, we are still in a position where we can fix it. We can bail out the boat, patch it up, and continue to paddle confidently into the 21st century, but the choice is ours and we must make that decision before the end of the decade of the Seventies.

Thank you very much.

(Applause.)

Text of the Address by The Honorable Julian M. Carroll
The Governor of Kentucky &
Chairman,
National Governors' Association



With introductory remarks by The Honorable Philip S. Hughes
Assistant Secretary
Intergovernmental & Institutional
Relations
The Department of Energy

ASSISTANT SECRETARY HUGHES: Thank you, Bill. It is good to see all of you again, and some additional people besides. We are most gratified at the interest in our conference. We attribute your interest, at least in part, to the subject matter, and regard it as a good omen for our energy future.

We also, though, attribute it to the presence of individuals like our speaker at this luncheon. We are most fortunate to have with us Governor Julian M. Carroll of the Commonwealth of Kentucky.

Some of us have no shame or at least have reduced shame accumulated over the years of a profession. I have, on various occasions, said I didn't really mind being called a bureaucrat if you smiled just a little bit when you say it.

Governor Carroll tells me that he really doesn't mind being referred to as a politician, and I think that is understandable. I have heard politicians described as statesmen with some accomplishments to their credit, and the Governor has those, a great many of them.

I won't try and address all of them at this point, but let me just enumerate a few that perhaps are important for the purposes of this particular session.

He has built an outstanding record of competent, compassionate, and I think statesmanlike service in the state of Kentucky. He has served five consecutive terms in the Kentucky House before being elected Lieutenant Governor in 1972. He was, incidentally, Speaker of that House.

When he became Governor in 1974, it marked the first time that a Kentucky Chief Executive also had presided over both Houses of the State's General Assembly. Quite an accomplishment.

He has been elected to all or almost all his offices by a very wide margin, I think 63 percent in the gubernatorial election, and a lot of Presidents would like that kind of a margin in the national government.

Last August he was elected Chairman of the National Governors' Association, the first Kentucky governor to have that opportunity and honor, and from our perspective in the Department of Energy, we have enjoyed a special relationship with him since our beginning because of his service as Chairman of the National Governors' Association's Natural Resources and Environmental Management Committee, two terms on that committee.

There are some other things that I think would be of particular interest to this group. As Governor, he has been energetic and successful with respect to raising the status of public education in the state of Kentucky.

When he took office as Governor, the state was tied for last place in its per-pupil spending and was 46th in average teacher salaries. Under his current budget, it is expected that Kentucky will be well up in the middle reaches of the array of states in both of those respects.

Average teacher salaries in Kentucky are expected to exceed the average of Kentucky's eight surrounding states by the time of the next

fiscal year, a goal that really represents quite an achievement and reflects the energy with which he has pursued educational matters.

He also has served on the National Committee for the support of Public Schools for a period of eight years up until he was elected Lieutenant Governor. He has been a trustee of Paducah Junior College, again up until he was elected Governor, and, in general, has served the cause of education. He has been an instructor in the community college system, as are some at least of you people.

So, for all those reasons and some that there was not an opportunity to mention, I am very pleased and we are very honored to present to you Governor Julian Carroll of Kentucky, who is also President of the National Governors' Association.

Governor Carroll.

(Applause.)

GOVERNOR CARROLL: Thank you so very much, Secretary Hughes. Ladies and gentlemen, indeed I am honored to have the opportunity to come and visit with you in what we consider to be an extremely important conference.

Shortly after the enactment of the new energy bill in Congress, I was talking one day to Dr. Schlesinger, and we both agreed that our major problem was in front of us in spite of the fact that we had just made history in the United States Congress, particularly history within the past three decades in which the Congress had enacted legislation that they had been trying to agree on for more than 30 years.

One of the particular areas that had deeply concerned us was the matter of preparing ourselves for those individuals that we must have to support the increased need for domestic production of energy in America.

We talk a great deal about the fact that we want to become independent of foreign countries and yet very little is said about our need to provide the expertise, knowhow, that we must have in order to achieve that production here in the American states.

The other area that we talk about, that is now scheduled for the Governors' winter meeting in late February, is the implementation of our national energy policy at the state legislatures that are now in session throughout the country, and we will deal with that as one of the major topics of the National Governors' Association winter meeting here in late February. We would invite you to come and share in the observation of that forum because we feel like you would find it most interesting.

This afternoon I want to spend my time in two basic subject areas. I want to let dominate my remarks the very subjec I am sure that you would be most interested in, and that might be called energy education and what we might do to prepare ourselves for the work force necessary to carry out increased energy production.

But before I get to that, I want to take a few minutes to speak more generally about public support for education. I really think that those of us in public office ought to speak more often about the major problem

confronting most of our states, if not all of our states, in the area of financial support for education.

Unfortunately, education is not like the matter of failing to pay your light bill. If you fail to pay your electric or your gas or your water bill, you wake up someday and turn on the faucet, and no water; or you flip the switch and no lights; or you turn the faucet and no gas.

But we have no such simple measurement of our deficiencies in education. We suffer for decades of our failure to properly educate each of our generations, and thus it is a little more difficult for us to relate to the American constituency that pay the bills when we talk about something called quality education.

They understand when their lights are turned off or their water is turned off or their gas turned off, but it is a little more difficult for them to fully appreciate why it is that little Johnny can't find a job or why it is maybe that he doesn't read or write even very well sometimes.

That is the closest, I guess, you can really bring it to home when it directly involves a member of the household. Then they understand it. But you don't really bring all the problems of education again so simply before the constituency that supports education. That is the American taxpayer.

In Kentucky, we have not had a local referendum to support increased funding for education to pass for four years. They have been consistently defeated by the taxpayers throughout our state in every community, community after community. Even at times when they are identified for a particular new school building in a community, and the voters have voted no.

I think it is extremely important, as part of the process that you and I have to face, that we recognize that there has to be some reason for the lack of public support for improved or increased funding for education.

We can spend a lot of time on it this afternoon, but I think it goes without saying that we are caught, along with everybody else, with the present mania for cutting government spending generally, a move which in many respects is well-founded in some areas where we have had excessive spending beyond sometimes our own ability to spend or even beyond sometimes the very need for such expenditures. But education will suffer just like every other segment of society will suffer as a result of that new American movement called Proposition 13.

In my own state, for example, at the moment our general assembly in session more than likely will put an upper lid on local property taxes, trying to keep them from escalating as fast as they are presently escalating, and I can fully understand and appreciate why local legislators don't want to go home and face their constituency who are paying larger property tax bills than they have paid in the past.

You know, that is what started all the problems in California were enormous property tax bills that people were having to pay. So, one understands that. But on the other side of the ledger, one must also understand that those dollars not collected will not be spent improving education,

again something that we probably won't measure in this decade. It will be another decade or two down the road before we get around to measuring it and fully appreciating what we failed to do.

So, I say to you quite candidly that a responsibility which I have as an elected public official, but one which you have, too, as an educator, as a worker, as a citizen, is to help us achieve better appreication, confidence in the educational system and its needs if we are ever able to raise ourself, as one might say, by our own bootstraps.

We can never achieve increased productivity, improvement in our gross national product, we can never achieve full employment, greater resources for better recreational facilities within the family and its environs without a good educational program.

That is what we have got to tell the American public in one way or the other. So, let's get on with it. Why must we have dollars to educate? I guess one of the faults of this generation is that we have so oversimplified seemingly everything that we do that the American public expects to push a button somewhere and get an answer.

I guess I come as close to losing my own cool recently in a massive flood that we had in our state capital, when we had sent the National Guard to move people's furniture out of their house, only to have one occasion reported to me where a couple of big, brawny boys sat on the front porch and watched the National Guard move their mother's furniture out of the house.

But that is how far we have come in government these days. We have told the American public -- when I say "we," I am talking about we politicians -- have told the American public, "Don't worry, we can do it for you." We will serve you to the point that the American public generally thinks that all answers to all questions is a matter of letting government do it.

We politicians are at fault in telling the American public that for years now, but we are finally having to say to them now, in a time of inflationary spending, in a time of scarcity of dollars, in a time of expansion of government services, "We don't have the money to do it now."

So, what we have done is spread our priorities so thin, we are doing a little bit of everything and not much good at any one particular thing, particularly in the area of education.

I don't know of any one single field of productivity that relates itself so directly to ghe gross national product, that is so important to all the American public as is preparing ourselves for self-sufficiency in energy in America.

I want to break down for us very quickly three particular areas where we have got to concern ourselves. One, we might call production, the simple act of going out and extracting the mineral from the ground and producing it, getting it within the marketplace, in its raw form, in some order, an area in which we need a substantial increased number of individuals.

In the process of doing that, there is that concern for, and the law protects, the environment within which that is done to the extent that we

have to watch our water resources, our air resources, and our land resources. So, that is another whole major field of environmental education to which we must address ourselves if we are to prepare for this major effort that is now before us.

There is a third one that is easily overlooked if we are not careful, and that is what might be classified as administrative education, that whole area where we have to provide expertise in the form of lawyers, planners, designers, architects of one kind or another, engineers of one kind or another, that are involved in the administrative process of achieving the legal authority to go out and extract the mineral in the first place.

In other words, we have got a whole new mass of informing, of educating, of providing experience to now, a group of individuals that gets us to the point of production. Production doesn't come first; production is second.

First is the authority by what is generally classified a permit to go out and perform an act, and that whole field of permitting now requires every expertise known to man. Everyone you can possibly conceive of is involved now in the administrative process of permitting.

Now, don't misunderstand me. I am not only talking about from within government; I am talking about outside government. I am talking about individuals who have professional know-how, that will be either on the payroll of a major business corporation or be in a consulting business on the side that will perform the service for the entity that is to perform the production, and to a great respect, the counterbalancing checking system involved in the governmental activity, be it the Federal Government or the State Government, City or County Governments, the whole administrative body of processing the necessary bureaucratic paperwork to get us to the point where we finally now start producing.

Now we are at a point where we, in the production end, need engineers. We need all kind of engineering specialties and hydrologists. We need chemists. We need operators for all the major equipment. We need safety analysts. And, of course, in the whole process then of protecting the environment itself, again you duplicate a number of those professions, but you get involved again in the new fields of environmental education that involve particular expertise and measurement standards that are somewhat new, to a great extent, to the educational community.

Are we prepared to do it within our educational system? To a great extent, our educational system is attuned to examining the modern day needs of any particular society and trying to respond to that society sufficiently to educate those that are going back in the society and then performing the task of any particular decade.

But I say to you that sort of osmosis process over maybe a ten-year period is going to be too long. We need the people we are talking about yesterday. We needed them last week and last month, and we needed them last year.

In the Kentucky State Government, for example, I have provided three increments for our new safety analysts in the past year because I can't hire them at the salaries we started with. So, we increased it

again and still couldn't hire them. So, we increased it again, for the third time within a year. Industry is still hiring them out from under us so fast that we are having to take a look at increasing it the fourth time.

Obviously, there is a great competition in the marketplace for energy-related specialties, and somebody, additionally, has got to stand up and tell the young people of America that getting a college education and a degree does not provide them an opportunity instantaneously for the job that we are talking about.

I will here and I will say anywhere else in America, and I have said to my own children, although I, as a father with a college degree or more, one or more -- I am proud to see one of my children having graduated from college, and I have two already -- but I have to say to one of them, as I did candidly recently, "You are going to lost at least $50,000 a year in income if you go back to college."

That is not, of course, totally true for every profession, but we have to tell these youngsters in high school and these youngsters then looking for an opportunity for gainful employment, that more than likely you can get all the education you need somewhere in a good vocational school or a community college, and immediately go out into the marketplace, making more money than your daddy probably is making now, and don't you think that doesn't cause a lot of problems at home, but it happens to be true.

In Kentucky, we have created a Department of Occupational Education, separating it from our secondary educational system. Those of you who are educators particularly appreciate and understand the politics, and every one of you are one, sometimes a better politician than I am in your own way. As one said, "It is because your stakes are lower and it is much tougher for you to get them."

In the politics of education, of course, the competition for that scarce dollar, between elementary and secondary education, vocational education and higher education, of course is extreme. So, in order to provide the proper advocacy for occupational, vocational education, we separated it as a distinct department with its own regulatory board, taking the regulatory aspects and the advocacy aspects of the secondary and elementary system, which includes our kindergarten programs, out from under the old school board, making it now a secondary school board, creating a separate, distinct occupational board.

We have a separate higher education authority, but then swapping out so that one member of every one of those other boards serves on all the other boards, so at least they all know what each other is doing; to the point now that we have a strong advocacy system for occupational education in our commonwealth.

We have a strong system of education that has been advocated by not only the business community, but by our labor community and by our educators. We put them together in a task force to the point that our educational community and our labor leaders and our business leaders sat down around a table and unanimously agreed on what our initiatives should be. And then we drew up the legislative package, and not a single member of the general assembly voted against it.

We had all the labor support, we had the business support, and the educational support, and we think today, for example, we have got the finest mining safety program in America in Kentucky.

Of course, obviously, it is unfortunate that our attention is brought to such an aspect of our industry as the results of disasters that we have experienced in our state. Unfortunately, it takes those disasters sometimes to make us react properly as we should.

I say to you, then, that when you return home, that you have not just the single understandable task of creating sufficient programs at your particular institution, to educate all the innumerable, various professions that you must have to serve the energy community. But you have got a tougher job on your hands. That one is an easy one compared to the more difficult one of finding the dollars with which to do it. I suggest to you the vast importance of working with your elected leaders, your legislators, your other public officials in your state, of trying to bring about some public appreciation, some public confidence in your educational system.

I guess one might say that I took on some aspects of our educational community in the Commonwealth of Kentucky in our '78 session, by passing what we call a School Improvement Act. I have confidence in our educators in our commonwealth and I know that they are doing a good job. And while it wasn't particularly popular politically, we gave them the largest increase in funds ever experienced in our commonwealth.

When I became Governor of Kentucky, our educational budget was 400 million a year. It is now 800 million. Just in my administration, we doubled it. There are no votes in there, but it was right, and it will take another decade before it will ever be fully appreciated and fully understood.

But we need presently public confidence in order to maintain that level of expenditure, and fighting continuing inflation as it erodes those dollars. And to get it, we had to go to the point of trying to convince the taxpaying public of what we are doing for their children.

So, we passed our School Improvement Act that provides for mandatory testing at certain grades, with remedial education on failure to pass those tests, so that when Johnny graduates from high school, he has some particular expertise. And if during high school, he loses confidence in the system and suddenly becomes a dropout, that we pick him up in the vocational school and provide him some education for gainful employment.

I don't know of any other way to get the public's confidence, that we must direly have if we are going to maintain our present level of expenditure for educational improvement in our state.

Thus, the relationship that is brought about through this conference, of our federal partner with the state partner, with our educational community, and with our working community is one vital if we are to achieve independence in energy in America before it is too late.

Our whole economy is dependent upon our energy sufficiency. We cannot achieve that energy sufficiency without your production of educated workers within society to produce.

But, again, I know and you know you can't produce those graduates with degrees, or with associate degrees, or with program degrees without sufficient financial support with which to do it. Therein lies our overall responsibility through our federal partner and our state partner and the constituency of those who understand our whole talents to the point of responding to probably one of the greatest crises affecting our country. that is so important to our survival as an independent nation, energy self-sufficiency.

As educators, as laborers, as business people, as community leaders, as public leaders, together we can do it.

Kentucky's motto is one that I think speaks very well to the situation: "United We Can Stand; Divided, Certainly We Shall Fall."

Thank you so very much and have a good conference.

(Applause.)

DR. TUCKER: Thank you very much again, Governor, for being with us today. We are delighted you would share those challenging remarks with us. The Governor has indicated that he would be delighted to answer any questions you may have.

If you have such questions, if you would stand at your table and address the Chair here, we will try to answer them.

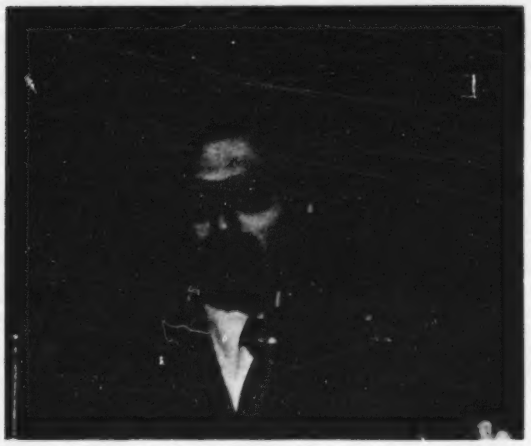
(No response.)

DR. TUCKER: I think you have mode your point, Governor.

I have a couple of announcements before we close. We will reconvene again at 1:30 promptly and don't forget the exhibit hall is open, and we invite you to that.

(Whereupon, the luncheon session was adjourned at 1:10 p.m.)

Text of the Address by The Honorable Arnold Packer
Assistant Secretary
Policy, Evaluation, and Research
Department of Labor



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DR. KELLETT: Our second feature in the morning program adds still another dimension to the oversight that is so necessary in really coming to grips with the complexity of the problem that we are dealing with. That, in this case, involves a complexity which reaches into the employment sector and our responsibilities as employers, trainers, or organizers of employees.

Dr. Arnold Packer, by the way, an economist, was close at least. I understand he got his educational degrees in North Carolina, which is in the right direction certainly, from here.

He was employed as the chief economist for the United States Senate Committee on the Budget from December 1974 until February 1976. From 1971 until 1974, he was the senior economist with the Committee for Economic Development, where he directed a comprehensive study of the nation's energy problem. From 1969 to 1971, he worked for the Office of Management and Budget, where he began a system for a long-range forecasting of the federal budget.

Previous positions were with the Research Triangle Institute, Aero Jet General Corporation, Jeris, Bomm, & Bolls, and General Electric.

Dr. Packer's book, "Models of Economic Systems, a Theory for their Development and Use," was published in 1972. He has also authored and co-authored numerous articles on various economic and social issues.

At this time it is my pleasure to introduce the Assistant Secretary for Policy Evaluation and Research of the United States Department of Labor, the Honorable Arnold H. Packer.

(Applause.)

ASSISTANT SECRETARY PACKER: Thank you. Let me add my congratulations to those who have organized these meetings. They have the promise of being very productive.

Cecil Andrus mentioned how quick Jim Schlesinger was. I have known Jim for almost 10 years now. Before he was so famous, when he was with the Atomic Energy Commission, he used to travel around with a chauffeur, explaining the difficulties of nuclear energy. The chauffeur would stand in the back of the room, and Jim would explain the complicated problems. After awhile the chauffeur said, "You know, that is not very hard. I bet nobody would notice if I took your place and you stayed in the back," because it was the same speech given again and again. So, Jim, always willing to see how things would work out, said, "Okay, let's try it. I will wear the hat and stand in the back, and you get up and make the speech."

He got up and made the speech. It was the canned speech. It worked pretty well. Then, he tried to answer some questions. The first few questions were kind of simple. It worked out all right. Then, some nuclear physicist in the back asked some awfully tough questions about radiation. The chauffeur up there, being with Jim so long, had also gotten fast on his feet and said, "That is a simple question. I mean that question is so simple, I am embarrassed to waste the time of this organization and this meeting trying to answer that question. Why, that question is so simple, my chauffeur in the back of the room can answer that." (Laughter.)

I am going to talk a little bit about employmert and energy. We think that with some training, people can move into the new economics, into the new labor force requirements, and move up from being a chauffeur in the back of the room to standing at podiums.

But before I do, let me talk a little bit about what the energy situation has done to overall employment. Although it could have been worse, the rise in oil prices during the last five years has certainly given a wrench to the economies of the industrial world.

In 1973, the price of Saudi oil was about $3.00 a barrel. There were about 4.3 million persons unemployed in the United States and another 4.3 million unemployed in the remainder of the OECD industrial world. Although inflation and productivity had worsened in 1973 from previous eras, the average inflation rate, in the five years ending in 1973, was about 5 percent and productivity was almost 2 percent. It was growing at almost 2 percent a year.

That was five years ago. Today, the price of Saudi oil is over $13 a barrel without transportation. By the end of the year it will be over $14.50 a barrel, almost five times as expensive as it was in 1973.

In the last five years, the productivity growth was only 60 percent as great as it was in the previous five, and the rate of inflation in the last five years was 60 percent greater than it had been before.

More to the point of this conference, the number of unemployed is now 40 percent greater in the United States than it was in 1973, and we have been a sterling success compared to the rest of OECD. Unemployment there has increased two and a half times. Altogether, in the industrial world, the number of unemployed grew by 7.7 million between 1973 and 1978, rising from 8 1/2 million to close to 16 1/2 million persons. While employment has grown rapidly in the United States, it has actually declined in many industrial countries.

Obviously, it would be wrong to place the blame for all our difficulties on the explosion in oil prices. However, it would also be difficult to deny the major role that energy has had in the world economy.

This morning, I would like to discuss two aspects of this relationship between energy and employment: First, finding an energy

policy that can be tailored to the employment policy, and second, finding an employment policy that will fit with our energy policy.

I believe that a high employment energy policy requires gradualism with security. By this, I mean allowing gradual increases in U.S. energy prices to the world price of oil, while developing security through diversity of supply in stockpiles.

The previous administration believed that gradualism was unnecessary. In 1975, they suggested immediate decontrol of oil and gas prices and putting a tax on top of the decontrolled price. Had this occurred, the United States would have done even worse than Japan and Europe has done with regard to employment. I think we would have had double-digit inflation and double-digit unemployment simultaneously if that policy had been adopted.

As it was, unemployment got to 9 percent in 1975. With the policies that were adopted, inflation fell from 11 percent in 1974 to 7 1/2 percent in 1975, and then when energy prices were rolled back, to less than 5 percent in 1976.

But I think the most dramatic way to demonstrate the virtues of gradualism is to compare our reaction to the energy shock with that of Europe and Japan. While the U.S. unemployment rate has fallen since 1975, when the shock was really being felt and employment has risen, the opposite has taken place in Europe and Japan.

Since 1975, employment has grown by almost 11 million persons in the United States. That is record growth. Unemployment has decreased by almost 2 million. If you take Europe and Japan together, employment decreased by almost 5 million people, while unemployment increased by almost 3 million.

If the U.S. labor force had grown the way it has, with the baby boom and women entering the labor force, but the employment had followed the pattern of Japan and Europe, the unemployment rate would be over 20 percent in the United States today.

Therefore, gradualism was a much better course than either immediate decontrol or rationing, which was another policy that was talked about in 1975.

The energy bill of 1975 and the natural gas bill signed last year will tend to move U.S. energy prices to world prices over a period of years. How many years, is still a matter of debate. Events of recent months, in Iran, underline the wisdom of keeping an eye on U.S. energy prices. We cannot afford to allow a random shock outside the United States to bring the United States into another recession.

Rather, we should attenuate those shocks with a policy that takes advantage of the substantial amount of U.S. domestic energy production. Saving energy by creating a recession and higher unemployment makes little economic sense.

In the same way, saving employment by permanently maintaining energy prices below their market value is also myopic. The optimal policy is the current one, the administration's policy of gradualism, which will ultimately bring U.S. energy prices to the appropriate level, but recognizes the economy's need for time to adjust.

Time is needed in order to shift a complicated economy. It takes many years for energy investment to produce oil and natural gas. The future price of oil or natural gas is, therefore, more important to an investor than the price yesterday or today.

The same is true on the conservation side. I think the automobile industry provides a good example. Current policies will double the efficiency of the U.S. automobile population. Efficiency will increase from roughly 14 miles per gallon in 1974, to close to 28 miles per gallon in 1985.

This gradual transformation will allow the automobile companies to retool and change their product at a measured pace. It will also permit automobile owners to operate their 1974 cars for a reasonable period.

The alternative, which we experienced a taste of in 1975, is to stop driving and stop buying automobiles. Sales of domestic cars were only 7 million in 1975. Last year they were over 9 million, an increase of over 30 percent. We even saw last year that the insulation of homes can move only at so fast a pace before we run into charlatans and shortages.

The goals of our employment policies was specifically entered into law last year. The Employment Act of 1978, the so-called Humphrey-Hawkins bill, established goals for unemployment and inflation in 1983. These goals are 4 percent unemployment and 3 percent inflation. Just as our energy policies will be a constraint on achieving these goals, so will employment and inflation goals be a constraint on what can be done in energy policy. Neither set of policies can be pursued in a vacuum.

My second topic this morning is trying to tailor the employment policies to our energy goals. In an overall sense, one might think that the higher price of energy will lead employers to substitute labor for energy. The shortage of energy means there is more work to be done by humans. Homes might be built more carefully, using more labor to make homes weathertight and reduce their energy consumption.

The engineering and construction of new facilities could be more carefully done. Retrofitting of commercial and industrial establishments is labor-intensive. The energy-producing industries themselves are likely to become more labor-intensive per unit of energy produced.

As this occurs, labor productivity, as conventionally measured, will diminish or at least not grow so rapidly. That is, the normal way to measure labor productivity is output per manhour. This ratio will not grow rapidly if we substitute labor for energy.

Indeed, we have been a marked slowdown in productivity throughout the economy, and especially in the energy-producing industries. I don't know why this slowdown has occurred or whether it is related to the energy situation. Productivity was slowing well before the crisis, but the deterioration has been very rapid since the rise in energy prices. Without knowing what the reason is for certain, it is certainly consistent with the idea that less energy means more labor.

The productivity slowdown has been especially evident in the mining industries. Productivity has fallen there by 22 percent since 1973. A substantial portion of this decline has occurred in oil and natural gas, where it may mean just drilling deeper for every Btu, which is likely to happen when oil goes up from $3.00 a barrel to close to $15 a barrel.

I am not sure that everyone recognizes that the call for substituting labor for energy or making ours a more labor-intensive economy is tantamount and exactly equivalent to calling for lower productivity. If this lower productivity turns into a higher rate of inflation, then we have an undesired by-product of what looks like an appropriate and common sense switch from a resource in short supply, namely, energy, to a resource that frequently is overabundant in the United States, namely, labor.

Changes in employment patterns in response to changes in energy prices will occur naturally, and most of it will happen without the Labor Department being involved. However, we are involved to ease that transition. We have one research project with the Department of Energy using an input-output model to determine the labor requirements of various energy technologies.

We hope that this data will improve our capability to estimate the direction and magnitude of energy-induced shifts in employment. This knowledge will help us better coordinate our energy and employment policies. We will know how energy alternatives affect employment, and we can help those developing training programs to take advantage of the new job opportunities.

The Department also has special responsibilities in easing the transition especially for disadvantaged persons. In Fiscal 1974, federal spending for employment and training was about $4 1/2 billion. In the current fiscal year, we expect to spend over $12 billion, almost a threefold increase.

Over three-fourths of these monies will be spent under the Comprehensive Employment and Training Act or CETA, and the CETA system can play a role in training persons for the new energy-related occupations.

As an alternative to training in the public sector, the CETA system is also placing increasing emphasis on private sector on-the-job training. One aspect of this is the private sector initiative, for which the President has asked $400 million. These funds will be made available to employers who hire disadvantaged persons, especially young persons, to defray extraordinary training and other costs associated with their employment.

In addition, last year the Congress passed an employment tax credit, which permits employers to take a credit on their corporate income tax equal to half the employee's salary up to a maximum of $3,000 in the first year and to a quarter of their salary, up to $1,500, in the second year for eligible youth and other persons such as the handicapped, veterans, and so on.

So, these are two features that those in vocational training can employ sometimes to get their graduates into private employment. That is on-the-job training subsidies through the CETA system or employment tax credits, make investing in employees somewhat less expensive for private employers.

In addition to these private sector activities, CETA supports public service employment. Public service employment has dual purposes, to provide jobs and to meet other objectives such as energy conservation.

In order to accomplish the latter, coordination is required between governmental units. The Department of Labor has signed joint agreements with the Department of Energy and other federal agencies to undertake projects that will both save energy and provide employment and training.

We are sponsoring a joint project with DOE and the Community Services Administration to provide benefits to low-income communities, including training for solar-related careers, assistance in utilizing solar technologies to help meet local energy needs in a cost effective fashion, and promotion of local economic development through energy-related businesses.

Another example, the same three agencies have funded weatherization and retrofitting projects on a continuing basis. By the end of Fiscal 1978, about 400,000 homes of low income and elderly families had been weatherized under this program, and at least 13,000 weatherization jobs had been created through CETA.

In summary, the relationship between employment policy and energy policy is a two-way street, just like the one between energy and the environment. We must have an energy policy that makes the U.S. economy secure from supply disruptions. In designing measures to facilitate adjustment to a world of expensive energy, we need to do everything possible to ensure that the adjustment proceeds gradually and smoothly.

The alternative may well be another recession and persistently high unemployment, and that is no alternative at all.

At the same time, the new energy economics will require major shifts in employment patterns. Labor and capital will be substituted for energy. New energy conservation and production industries will develop. Business will relocate away from energy-expensive regions of the country.

While these shifts will take place largely as the result of market forces, the process can be facilitated through the policies in the Labor Department and through the activities that attendees at this meeting undertake.

It is our hope that the Labor Department's programs can make a major contribution to ensuring that workers, who are displaced as a result of these adjustments, will be able to find new and productive employment elsewhere, as well as ensuring that trained manpower will be available to fill the jobs now emerging as a result of the new energy situation.

Thank you.

(Applause.)

DR. KELLETT: I think we have an excellent background now prepared for us as we break up and move into our specialty sections. I think we are perhaps more keenly aware now of the need to avoid people who propose simple solutions, to recognize the complexity of the problem and the interrelatedness not only of the two basic themes that we are brought together this week to talk about, manpower development and public awareness, but also how we must be in the process of debating these issues and discussing these issues, conscious of the delicate balance between the environment and energy, between employment and energy, between the physical science and the social science aspects of energy, and finally, and perhaps most importantly, an identifying of the role in which each of the groups that are represented here today can work cooperatively and not at odds.

We have developed, I think, from the background that we have heard last night and this morning, a better and keener sense of the white hats and the black hats. The oil companies do not represent an evil conspiracy out to destroy the United States; neither does the nuclear industry, neither does the Sierra Club, neither are the environmentalists, neither are the labor unions; all of which fuses together to remind me of the guidance that we got from the great philosopher Pogo, when he pointed out that we have met the enemy and he is us.

I think that the message is loud andclear that if we are to endure and to win the struggle with the energy problem that we are dealing with today, it is imperative that we all work together, very closely and very candidly.

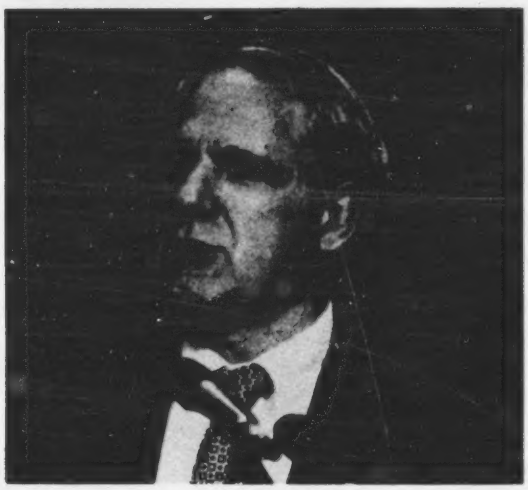
With that, I see that my correction earlier this morning was entirely in order. We are now back on schedule. I would caution you that we do begin promptly in the specialty sessions. We have got a lot of things to get down in the next two days. So, we will have a 20-minute break and you can reconvene in your specialty sessions.

Thank you very much.

(Applause.)

(Whereupon, the general session recessed at 10:05 a.m.)

Text of the Address by The Honorable James R. Schlesinger
Secretary
The Department of Energy



With Introductory remarks by The Honorable Phillip S. Hughes
Assistant Secretary
Intergovernmental & Institutional
Relations
The Department of Energy

ASSISTANT SECRETARY HUGHES (Standing)
SECRETARY SCHLESSINGER (Right)

ASSISTANT SECRETARY HUGHES: My task is a rather simple one, one of the easier ones I believe, to introduce the Secretary of the Department of Energy. My task is a rather simple one, one of the easier ones I believe, to introduce the Secretary of the Department of Energy.

James R. Schlesinger became the first Secretary of Energy on August 5th, 1977. He had previously joined President Carter's staff, much earlier in 1977, as assistant to the President serving essentially as energy adviser and sort of secretary and waiter.

He previously had been a visiting scholar at Johns Hopkins University, and came from there to join the President's staff.

Just prior to that, however, he spent some time in the institution then called the Bureau of the Budget, now the Office of Management and Budget, and this was undoubtedly one of the more formative and important periods in his career.

I spent about twenty years there, as some of you may know, and during the period that he was there as Assistant Director, I was there as Deputy Director. I hope that distinction becomes a little bit clear to you. It was only for a fleeting period, and I really haven't been able to capitalize on it since!

After he left the Bureau of the Budget, he became Chairman of the Atomic Energy Commission, was named Director of Central Intelligence, as I think most of you know, and then moved to Secretary of Defense. One can truly say that he has had trouble holding a steady job!

He was born in New York, has an AB, MA and Ph.D degree in economics from Harvard, and has taught in the field of economics and done miscellaneous other things when he was resting.

He has a marvelous wife, Rachel, and eight children. They live in Arlington, Virginia.

It is my real pleasure and privilege to introduce the Secretary who has had a very good warm-up, about three hours with the Senate Committee on Energy and Natural Resources.

This conference, Mr. Secretary, has been put together by Larry Stewart and associates. It consists of representatives of education, business and labor. It has been successful, I believe, and I believe the participants agree. They have about 1300 registrants, most of whom are here the last day of the conference.

You are in their hands, and they are in yours. Good luck!

SECRETARY SCHLESINGER: Thank you, Sam, for that generous introduction, and a particular reminder that I once worked for you, the subject that invariably seems to come up whenever we are together. The only reason you are where you are is revenge is sweet.

I'm happy to postpone my luncheon today to talk a little bit about energy awareness. This is the National Energy Education, Business and Labor Conference. What we are intent on is training for the future, awareness of our nation's energy problems, an awareness that comes hard to Americans because we have always enjoyed abundance in the past, and for that reason, we have been quite capable of disregarding warnings, warnings that have come with increasing frequency, ever since the embargo.

This country is now dependent on foreign sources of supply and increasingly the Middle East for almost 48 percent of its petroleum, and we have had in recent weeks, indeed, we have had throughout 1977 a steadily burgeoning crisis in Iran. Few Americans gave much thought to Iran prior to this year.

I am not sure to what extent the full magnitude of the impact of those developments falls upon us, but Iran contributes, has contributed in the past, some 6 million barrels a day to the world oil supply, about 10 percent of that oil supply, and roughly 20 percent of the oil, flowing into international trade.

It is now wholely shut down, and until we find the political settlement, it is unlikely that that flow of oil will resume. The consequence is that we are now drawing down inventories world wide to live with what we hope is a temporary interruption of supply. We are borrowing against the future.

If Iran comes back on stream sometime in the spring, we will be in a position that we can rebuild our own inventories in this country and around the world so that we will not have shortfalls next winter, but failing that, the normal stock building season that occurs starting in the spring will not result in the buildup of stocks that we will require for next winter.

Consequently, we will be faced as a nation with the need to take offsetting action which will constrain our own appetite for oil. Otherwise, we will run shy next winter.

We have obligations into which we have entered after the 1973-'74 embargo to share with other nations in a less favorable position than the United States in a time of emergency, and as a result of the Sinaii II agreement in 1975, we have obligations directly to Israel outside of the context of the international energy.

The problem of resources is becoming more formidable, and it is especially difficult for Americans who have known the open frontier, ever expanding horizons, to recognize that we are going to have to face constraint in this country, and to make adaptations. If we go about it intelligently, the constraints that we face will be relatively trivial, and the adaptations will come quickly, but it requires a change of attitude, and the hardest sacrifice for all human beings is to change their prejudices, their assumptions, and their attitudes.

That is what this conference is all about, to provide the training base as it were for that adjustment of the American society that must inevitably come in the 1980's. That was what the moral equivalent of war was about, the need to recognize that as America's responsibilities

in this era, not only with regard to energy supplies, but with regard to the balance of payments, our foreign policy obligations, and even more strongly, our responsibilities in the next generation when we will face a crisis if we are unsuccessful in our efforts with regard to fuel supplies.

Every time we review future supplies of petroleum world wide, we discover that our projections, our estimates, are less favorable than they were the previous time that we made such estimates. In the course of the last year and a half, our estimates of OPEC capacity in 1985 have shrunk by about 9 million barrels per day.

Now we have a panacea that was discovered by somebody about nine months ago, and it is called slow economic growth. If our economy grows slowly, we can adjust to the shortfalls in availability, and that is true as far as the energy budget is concerned. We will avoid difficulties by a shrinkage of income, output and employment.

It is a kind of odd view because what it suggests is that economic stagnation is the appropriate remedy for our energy problems.

That is a view that we cannot accept if we are to maintain the effectiveness of the American autonomy, if we are to maintain the viability of our political institutions, and the confidence that the people have in those institutions.

Were we to accept that view, it would mean growing levels of unemployment, a slowdown, a further slowdown in the growth of productivity and production.

The first claim on our energy resources and the first goal for national policy must remain production, and that is why we need additional awareness. The energy problem is not something remote. It is not something that occurred in Iran and involves street crowds and the Shah. It is something that will bear on this country very shortly.

The more effective we are in conserving energy supplies and in shifting from oil to more abundant fuels, the more we will put off that day of reckoning, and ultimately, we hope to make that transition to a society in which our dependency on oil and natural gas is diminished as painlessly as possible.

If we are heedless, the consequence will be that we go on increasing our dependency on oil, on foreign oil; our balance of payment costs will rise. They will be insupportable, and sometime in the 1980's, this nation and all of our allies and friends around the world will face a condition in which that previous growth and production can no longer be maintained.

Markets will clear, to be sure, under those circumstances, but they will clear through higher prices and through reductions in the level of income and employment in each and every country. That is a future that is unacceptable.

To avoid it, we need vision and we need courage and we need people who will respond to the challenge with vision, and train the American people in making the adaptation to this future.

If we do it intelligently, we can preserve the social institutions that are the pride of this country. We can avoid impacts on jobs and output and sustain the public's faith in America's institutions. That is the challenge.

If we fail to do so, we will face increasing domestic controversy akin to that that we experienced in the 1930's during the Great Depression. We want to avoid that at all costs.

Social institutions in the United States with all of their deficiencies are the most remarkable for a great society that has ever been put together, and more people in the United States are in a position to live an existence that is satisfying.

Freedom, security, are vital to us, and they are tied to the energy problem so that as you train the cadres to grapple with the energy problem in the next generation, you must recognize that it is not simply a small issue confinable to an issue of supply. It is one that bears on the very functioning of our society, on the preservation of our institutions, and the preservation of America's role in the world.

That is a great challenge, and we thank you from our small bureaucratic perspective here in Washington for what you are prepared to do out there in the country. Nothing will ever be resolved simply by preachments in Washington or by laws in Washington.

In order to solve this problem, there must be effort, spirit in every town, county, state, every institution, labor union, business, so that the net effect is to make this transition effectively and smoothly.

It cannot be done in a democracy without the support, indeed the enthusiastic support, of all of the people. That is your challenge, and we express our thanks.

Thank you very much.